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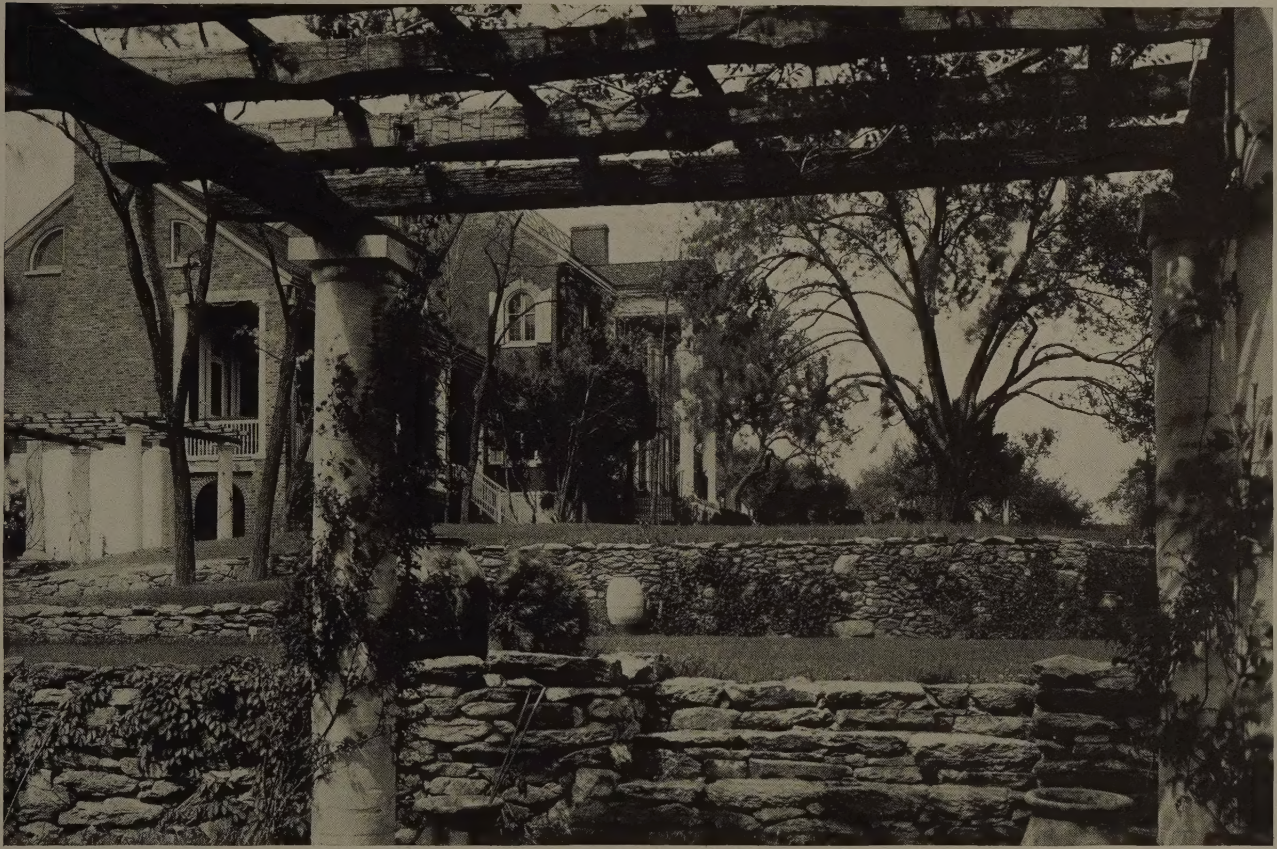


"Huntland," Estate of J. B. Thomas

Middleburg, Va.

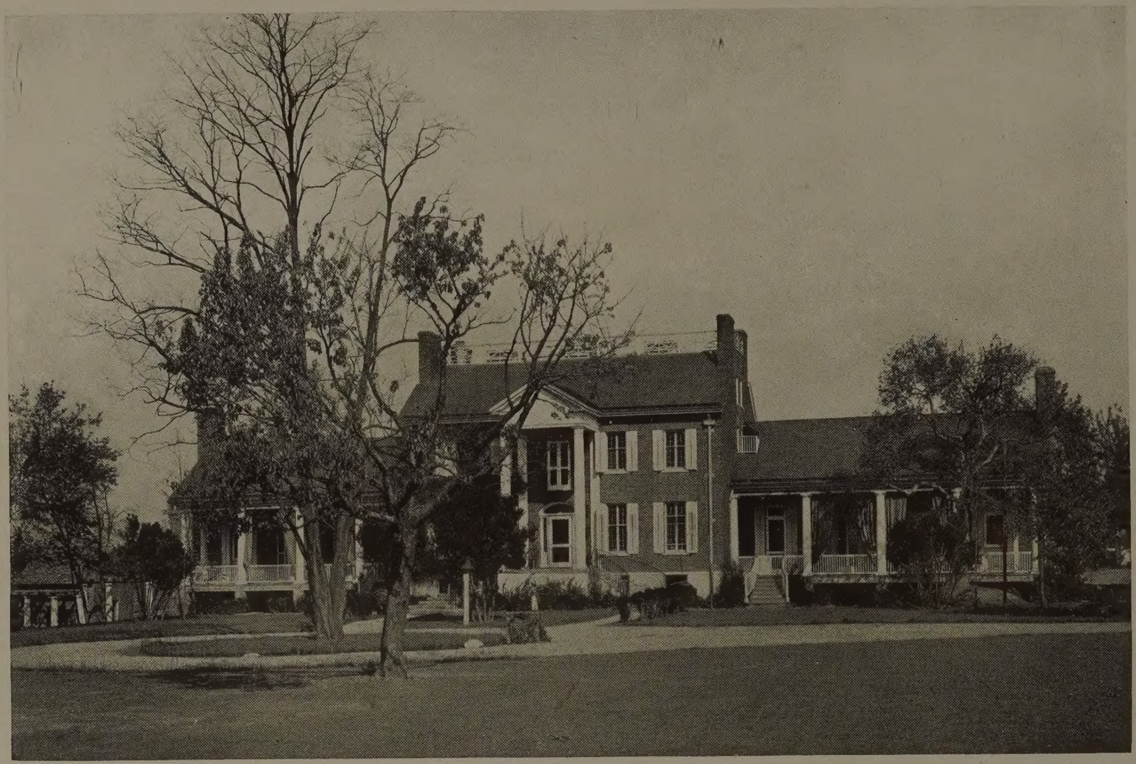
Peabody, Wilson & Brown, Architects

WITHIN fifty miles of the National Capitol there is a beautifully romantic and interesting region, in the heart of the Blue Ridge Mountains. It has been spared the conventional touch and the taming influences of real estate operations. Very near, by actual distance, to Washington and yet so far removed by inaccessible location from the activities of National Government the charm of this mountain country is known to only a few and even they have failed to grasp the possibilities of developing wonderful homes in this peaceful region.

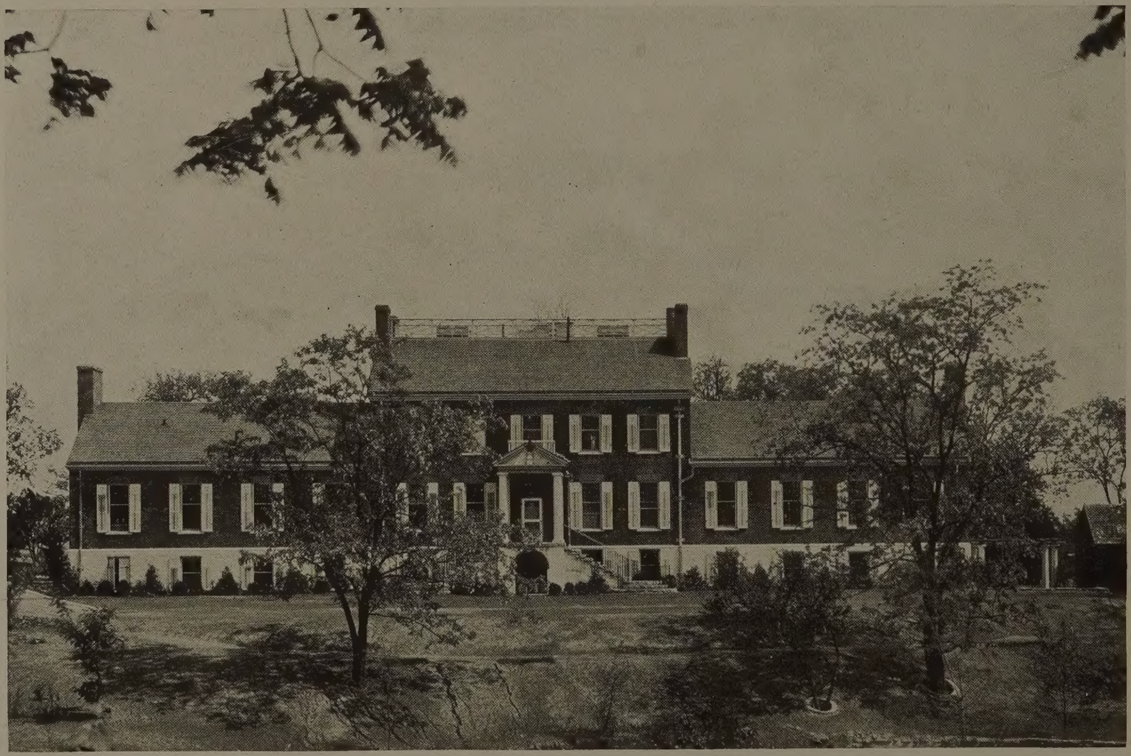
Mr. J. B. Thomas of New York selected his property, primarily intended for the Hunt, about ten miles west of Middleburg which is twenty miles from The Plains, Va., the nearest railroad station. The land is rolling in character, giving long vistas in every direction. The estate comprises some 400 acres, mostly woodland, only a small area being under cultivation.

The development of the estate came first into the hands of Architect F. J. Sterner, several years ago. He laid out the ground plan, decided the general location of the various buildings, and supervised the erection of some of the cottages, the kennels and the gate posts. He also made rough sketches for the residence and stables. From this point the work was continued by R. E. Haga of Middleburg, under Mr. Thomas' direction. The death of Mr. Haga caused the transfer of the

(Continued page 145)

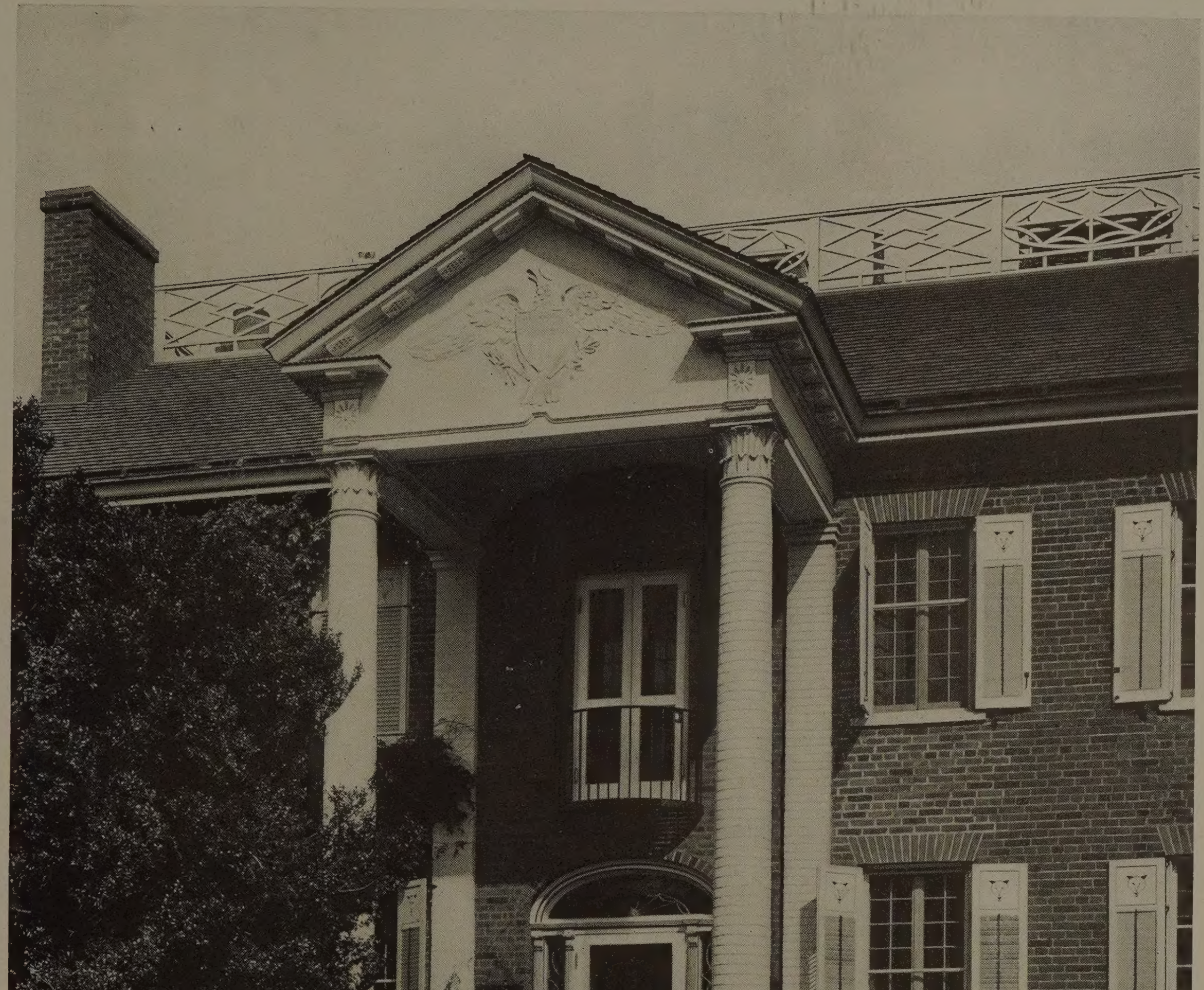


Entrance Front.

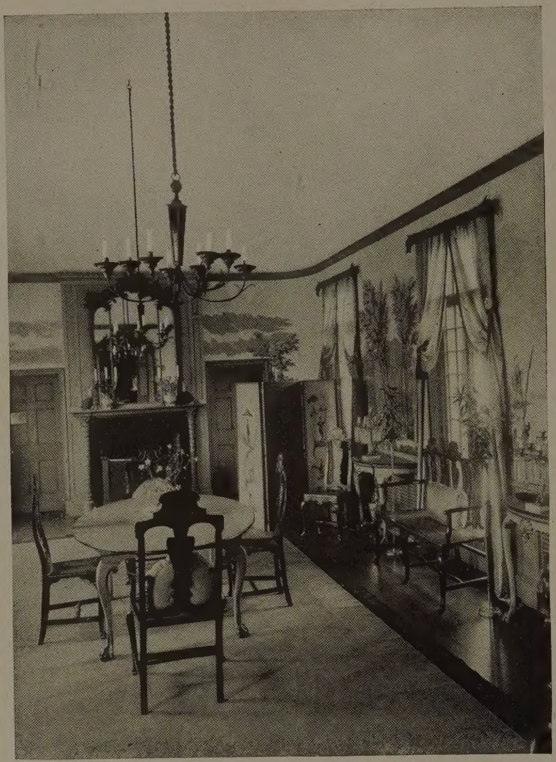


Lawn Front.

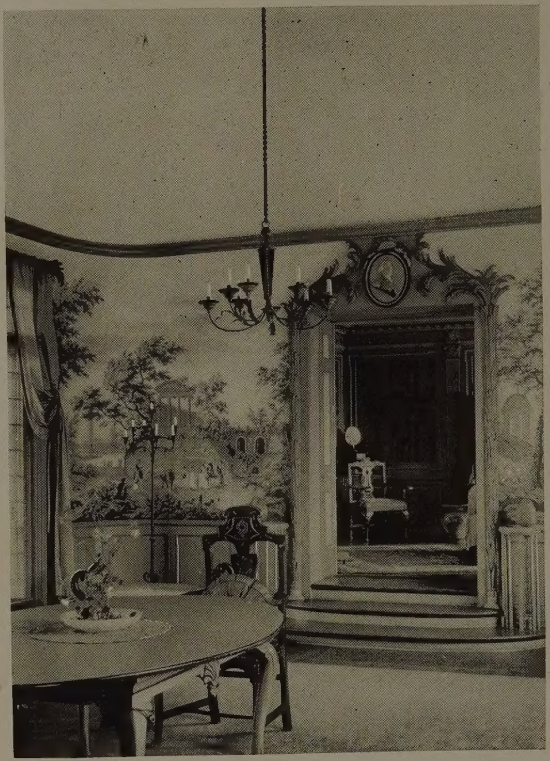
"HUNTLAND," ESTATE OF J. B. THOMAS, MIDDLEBURG, VA. Peabody, Wilson & Brown, Architects.



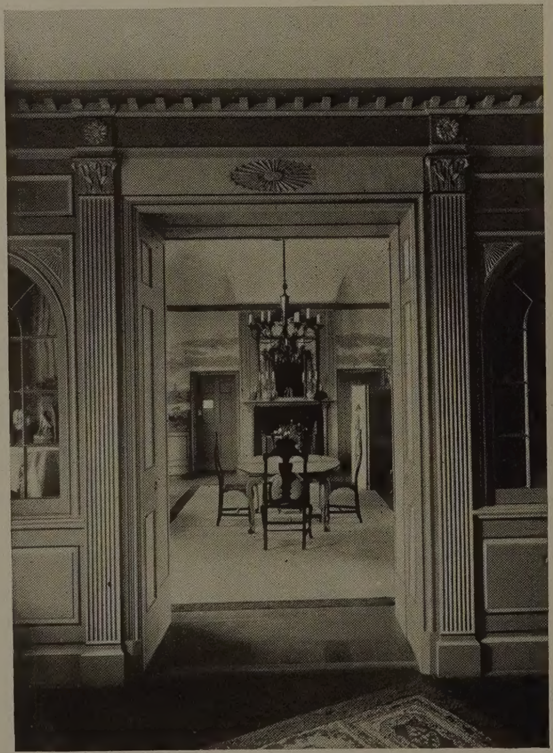
DETAIL, ENTRANCE FRONT, "HUNTLAND," ESTATE OF J. B. THOMAS, MIDDLEBURG, VA. Peabody, Wilson & Brown, Architects.



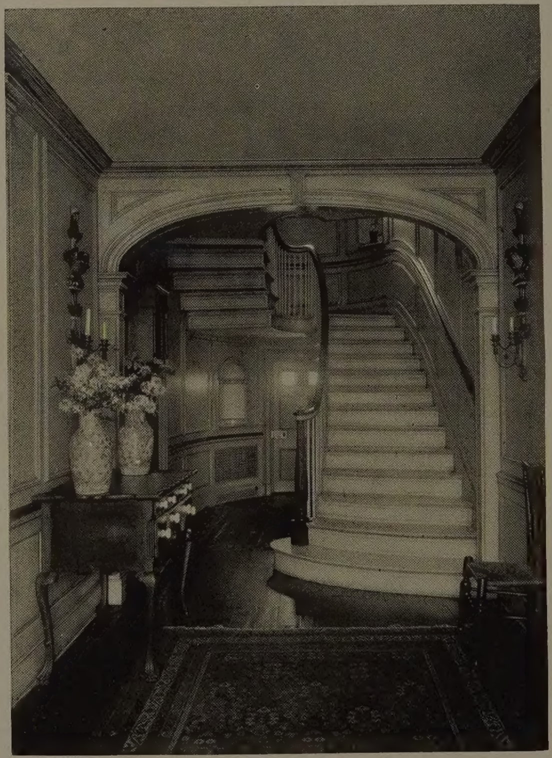
Dining Room.



Dining Room.



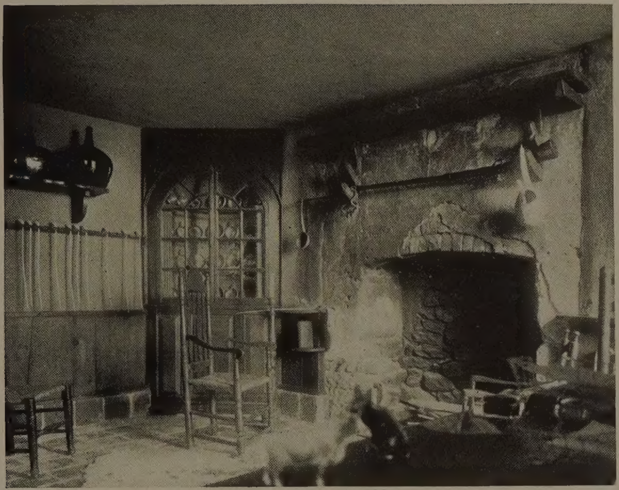
Doorway to Dining Room.



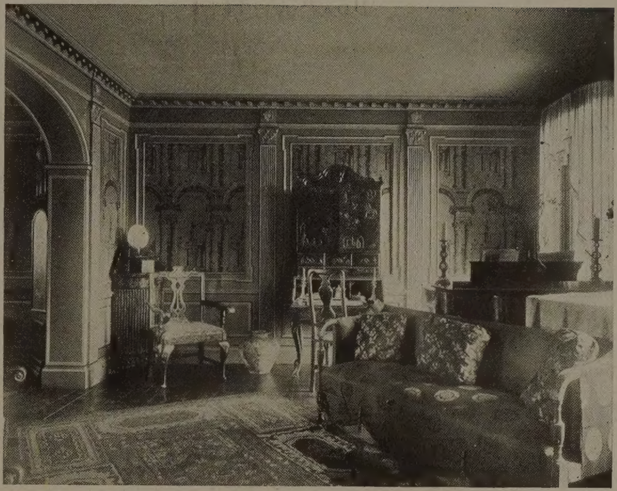
Hall.

"HUNTLAND," ESTATE OF J. B. THOMAS, MIDDLEBURG, VA.

Peabody, Wilson & Brown, Architects.



Gun Room.



Drawing Room.

(*Continued from page 141*)

completion of the entire estate to Architects Peabody, Wilson & Brown of New York.

The general layout of the estate includes the entrance gates with the two gate lodges near by, two additional cottages on the main drive, the kennels, stables, and the main residence including the gardens. It is carried out as a gentleman's hunting estate, picturesque throughout and unpretentious. The scheme is generous and spacious having something of the character of the plantation arrangement with its numerous outbuildings.

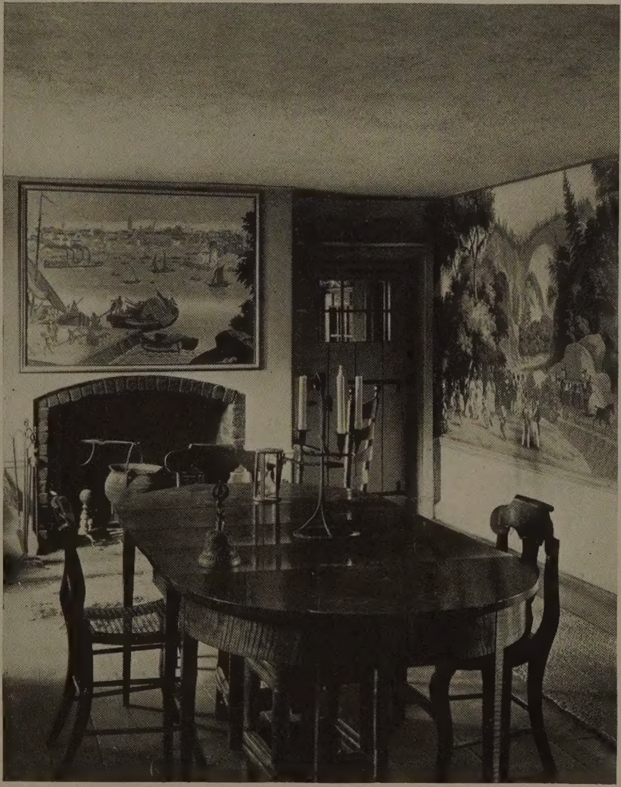
On the brick posts at the entrance gateway are tablets inscribed with greetings of welcome and the legend *Huntland.*

Fields, woods and stream
Each towering hill
Each humble vale below
Shall hear my cheering voice
My hounds shall wake
The lazy horn
And clad the horizon round.

At the top of the posts are mounted a fox and hound.

The cottages are built of terra cotta blocks covered with rough finish stucco and the design is very simple and dignified. The design and construction of the stables were made to conform to the treatment of the kennels which had been erected sometime before.

The main residence is built around an old structure which had been standing since about 1830, only the brick walls being kept intact. To this were added the two wings together with new windows, roof, railings and various exterior finish, designed with the intention of creating the appearance of an entire building erected at about 1800. It is built of old Virginia brick with old Virginia stone trimmings and wood trimmings. The new details were designed to harmonize with the old work, in fact, all of the woodwork was finished and carved by hand, painted and burned off and repainted so as to produce the desired appearance.



Hunters' Dining Room.

The first floor contains the drawing room in the central portion with the dining room and owner's bedroom suite each occupying an entire wing. The second and third floors are for guest rooms. The basement contains the gun room, special hunters' dining room and service rooms. The servants' quarters are in outbuildings.

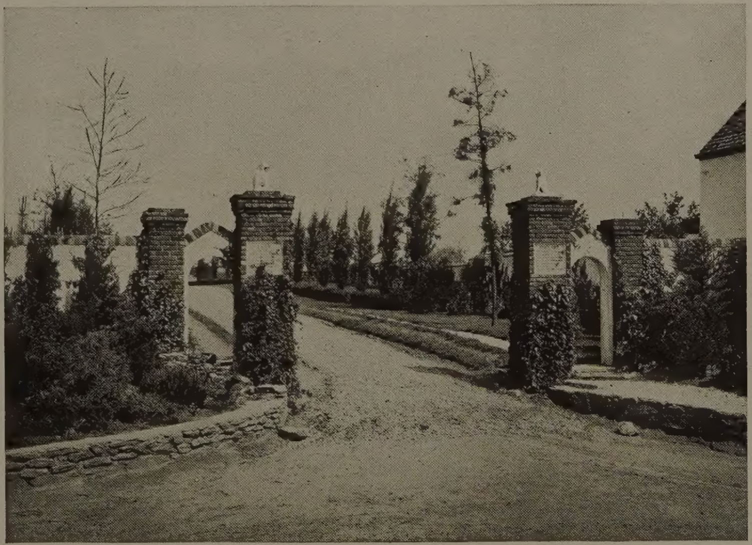
The drawing room, as illustrated, reproduces the old Colonial room. Attention may be called to the pilaster capitals and the cornice. A unique feature is the wall paper purchased by Mr. Thomas and re-hung under his direction. It has a strange appearance in the photograph and might be mistaken for other architectural treatment of an adjoining room.

The main hall, including the staircase, was designed and finished by hand to fit the Eighteenth Century surroundings. The floor boards are old and crudely pieced with no apparent attempt to "fix 'em up." This hall and stairs is an especially nice bit of work, which cannot be appreciated without the color values.

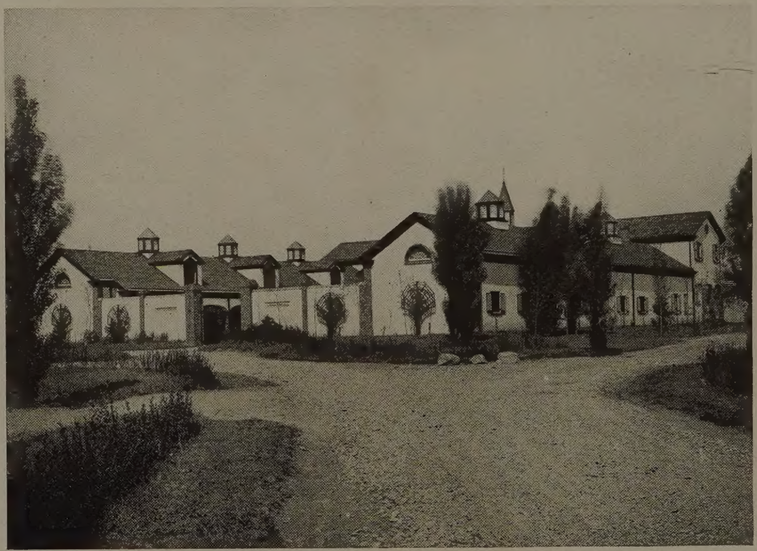
The woodwork in the dining room has portions of old Chinese wood brought from over the seas and matched to make up the balance of the room. The wall paper was removed from an old European building and carefully re-hung.

The owner's bedroom was designed to conform with certain pieces of Chinese furniture and an old wall paper purchased abroad. The idea is not incongruous to the Colonial atmosphere of the house. The American sailing vessels and merchantmen of the Eighteenth Century carried back to our

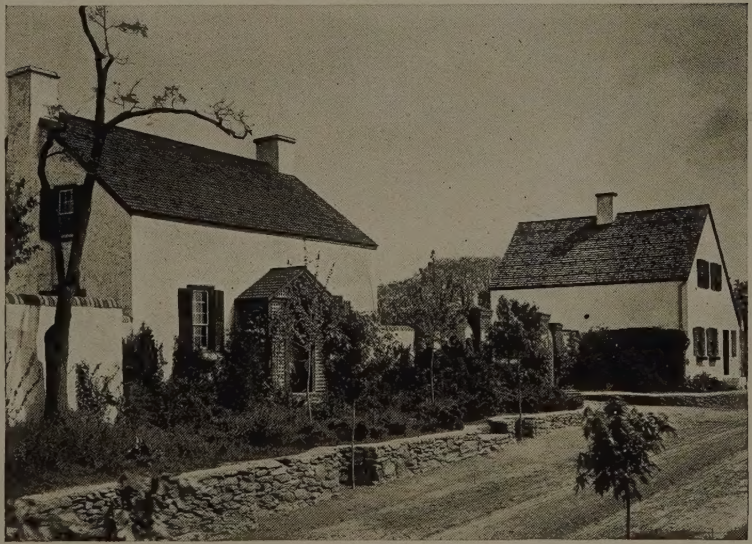
(*Continued page 147*)



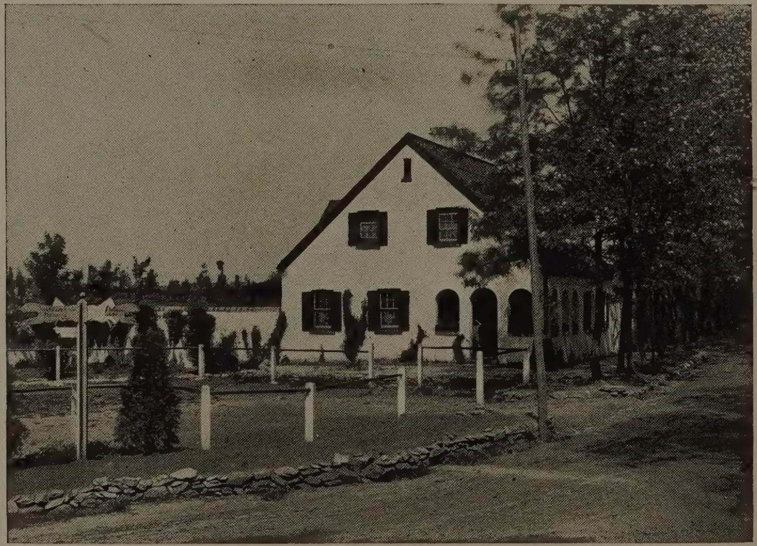
Entrance Gateway.



Stables.



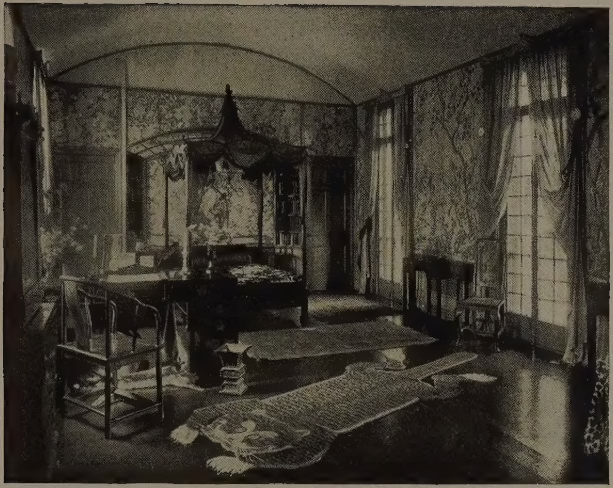
Tenants' Houses.



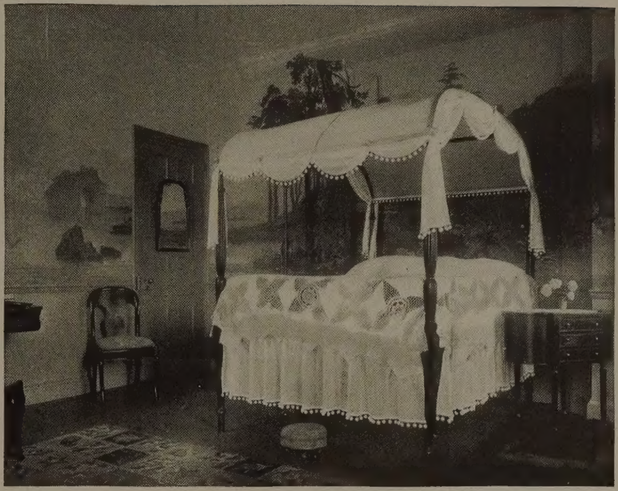
Superintendent's House.

"HUNTLAND," ESTATE OF J. B. THOMAS, MIDDLEBURG, VA.

Peabody, Wilson & Brown, Architects.



Owner's Bedroom.



Guest Bedroom.

(Continued from page 145)

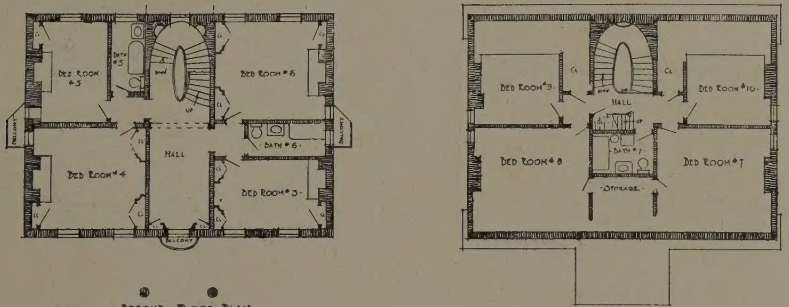
ports much Oriental furniture and decorative objects that found place in the homes of the wealthy planters of Virginia. No one seemed to question their fitness.

The chamber floors are quaint and old fashioned. The bedrooms are decorated and furnished in a most simple manner.

In the basement they have retained as much as possible of the old cellar woodwork and plaster. The gun room has the old wooden cupboard in the corner and the new details similar in character. Near this room is the special dining room for hunters constructed mostly of old materials left over from other parts of the building or gathered from various old Virginia houses of the same period.

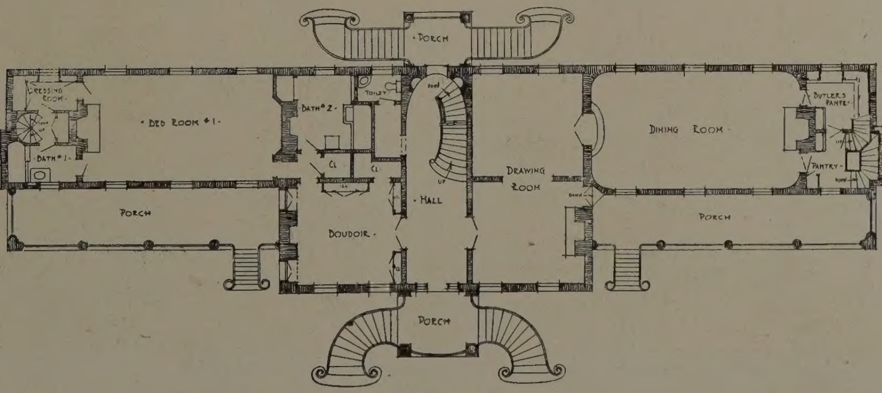
The glass in the windows and the hardware, as well as those purely modern fixtures of electrical equipment and bath rooms, are made to appear natural and ordinary fitments of the rooms. Much of the work was executed in the neighborhood and seems to bear a very intimate relation to the old work. This may be seen in the iron railings and the use of local stone about the house and surrounding gardens.

In general, the whole residence shows the result of an honest effort to preserve or reproduce the Eighteenth Century type, especially in the interior arrangements and details. A nice comfortable feeling pervades, free from formality or display.



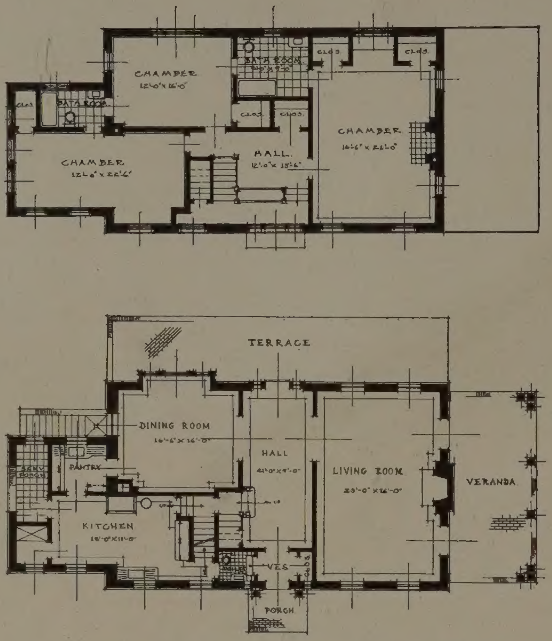
SECOND · FLOOR · PLAN ·

ATTIC · FLOOR · PLAN ·

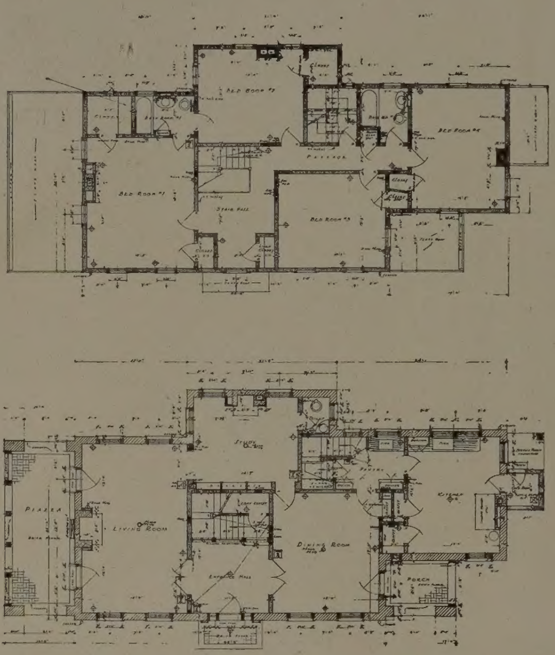


FIRST FLOOR · PLAN

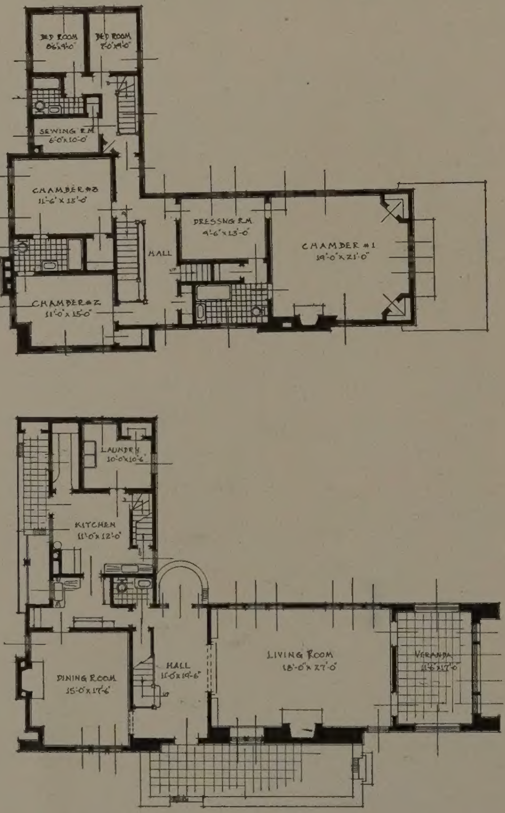
PLANS, "HUNTLAND," ESTATE OF J. B. THOMAS, MIDDLEBURG, VA. Peabody, Wilson & Brown, Architects.



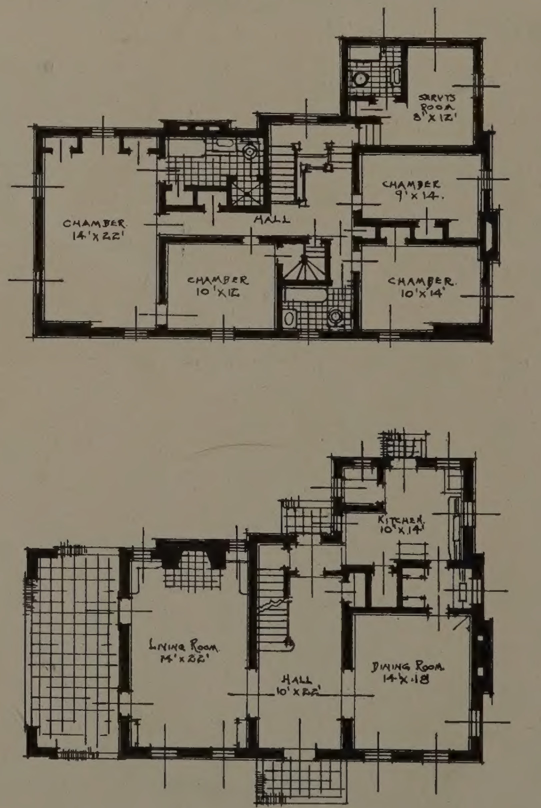
PLANS, HOUSE, ALFRED D. CHILDS, ENGLEWOOD, N. J.
See plate CIV.



PLANS, HOUSE, GEO. N. TIDD, ELIZABETH, N. J.
See plate CXI.



PLANS, HOUSE, WM. M. CAMPBELL, HARTSDALE, N. Y.
See plates CXII, CXIII.



PLANS, HOUSE, REGINALD HALLADAY, ENGLEWOOD, N. J.
See plates CXIV, CXV.

XIII. Engineering for Architects

By DeWitt Clinton Pond, M. A.

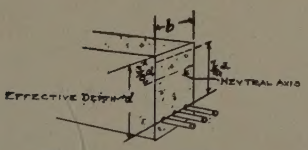
Mr. Pond has charge of the practical course in Architectural Engineering at Columbia University. He is the author of "Engineering for Architects" recently published in book form. This article, and others to follow in subsequent issues, is a continuation of the previous series concluded in the issue of June, 1915. It is intended especially for applications to concrete construction.

TO the layman the problem of determining the sizes of concrete slabs, beams, girders, and other members of a structure, is much more complicated than the determination of the sizes of steel members. A steel beam has well known, definite properties that are given in the hand-books of the various manufacturers, but this is not true of a concrete slab. The slab may be as deep as the designer decides to make it, except where this freedom of decision is limited by the building laws. There may be a variation in the percentage of steel, depending upon this depth, and soft or hard steel may be used for the purpose of reinforcing.

Concrete was used as a building material by the Romans who built their domes and arches by means of it. Once this concrete had set there was no thrust set up by the weight of the domes and arches, the problem of the supports being resolved to the comparatively simple one of holding up a vertical downward load. Unlike the later Gothic structures, where thrust was evenly balanced by counterthrust, the Roman buildings were covered by domes and arches that had no more thrust than inverted tea cups. The use of concrete seems to have been forgotten about the time that the Romans ceased to use it extensively. Only recently has its use and value as a building material been given careful consideration.

Concrete is made by mixing cement, sand, and stone together while dry, and adding water to form a proper consistency. The mixture is then poured into forms and allowed to stand until a chemical action takes place which *sets* the concrete. It is obvious that the only active ingredients in the mixture are the water and the cement. The sand and stone are simply dilutants, used to cheapen the mixture. The action is a *chemical* action, and this must be considered as different from mere mechanical drying out. Concrete will set as well under water as above it.

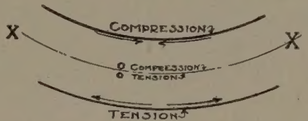
Reinforced concrete beams are beams in which steel rods are bedded in the concrete so that the steel will resist the tension or pull on the under side of the beam and the concrete will resist the compression on the upper side. Such beams have no definite properties such as an I-beam has, and the determination of their depth, and the amount of reinforcing, involves more figuring than is required for the design for steel beams. As in the case of steel beams, however, it is necessary to find what tendency there is for the loading upon the beam to bend it, and then to find the resisting tendency of the beam. If these two tendencies are equal, the beams will withstand the stresses set up by the external loading.



FIGVRE 82

Concrete floor slabs are considered as continuous beams, and the tendency of an external load to bend such a beam is given by the formula $M = 1/12\ Wl$. It will be noticed that this is only slightly different from the formula for bending given for simple beams, or $\frac{1}{8}\ Wl$. In other words, there is less tendency for a continuous beam to bend than there is for a simple beam to bend.

The resisting moment—or tendency to resist bending—of the floor slab is given by formulas that need a certain amount of explaining. Suppose, as in Fig. 82, a floor slab is considered as having a breadth denoted by b, and an effective depth—the distance from the uppermost fibres to the centre of the reinforcing—as denoted by d. $b \times d$ would give the effective area of the cross section of the concrete slab.



FIGVRE 83

As shown in Fig. 83, the bending of a beam sets up stress of compression in the upper portion and of tension—or pulling stresses—in the lower portion. There will be an axis in the beam, as denoted by XX, Fig. 83, where there will be no stresses of compression or tension, and this will be known as the *neutral axis.* In a wood or steel beam, having a symmetrical cross section, the distance from the top of the beam to the neutral axis would be one-half the depth of the beam. Although there is a theoretical distance from the top of the concrete slab to the neutral axis, which should be determined in each case, the practice is to assume that the distance from the top to the neutral axis is three-eighths of the depth of the beam. This is shown in Fig. 82.

As the distance from the neutral axis increases, the stress in the concrete increases, and all engineering formulas are based upon the assumption that the increase in the stress is directly proportional to the distance from the neutral axis. For an economically designed beam, the compression at the top of the beam should be exactly equal to the safe allowable fibre stress of concrete—650 pounds per square inch. Below the axis all the particles of the beam, including both the concrete and the steel, are in tension, and, as the New York Building Department will not consider concrete as having any value for the purpose of resisting tension, the only material that will resist the tendency to pull the lower portion of the beam apart, will be the steel.

The compression in the concrete and the tension in the steel will resist any attempt to bend the beam or slab, and this resisting tendency or moment is measured separately for the steel and for the concrete. Let S denote the total stress in the steel, and C denote the total stress in the concrete, the first being in tension, and the second being in compression. Then, as the distance between the centre of pressure of the steel and the concrete is usually assumed to be $\frac{7}{8}\ d$ (Fig. 82), it is possible to equate the moment for the steel and for the concrete with the M already found—$1/12\ Wl$. For this purpose the following formulas are used.

The moment for steel equals $S \times \frac{7}{8}\ d$.

The moment for concrete equals $C \times \frac{7}{8}\ d$.

These two moments must be equal and they both must equal the moment caused by the external loading, or $M = 1/12\ Wl = S \times \frac{7}{8}\ d = C \times \frac{7}{8}\ d$.

As stated before, C equals the total stress in the concrete, and if we assume that the unit stress at the uppermost particles is 650 pounds per square inch, and that the stress at the neutral axis is zero, the *average* unit stress in the concrete will be $650 \div 2 = 325$ pounds per square inch, and the total stress will be 325 pounds multiplied by the area of concrete above the neutral axis. This area equals the breadth of the beam—b—multiplied by the distance from the top of the beam to the neutral axis—$\frac{3}{8}\,d$, or the area equals $\frac{3}{8}\,bd$.

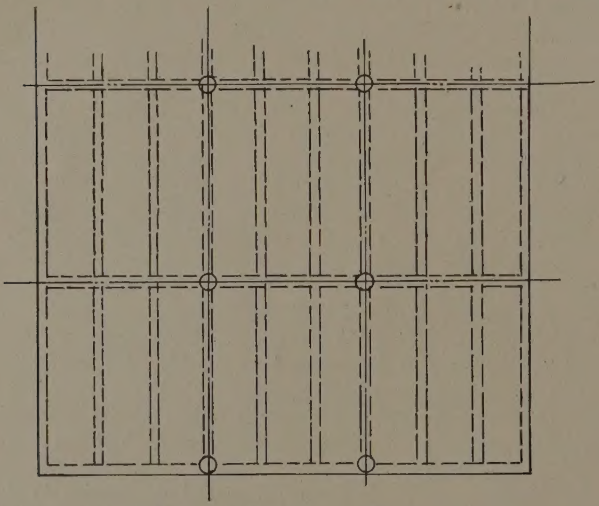
When slabs are being considered, the sections of the floor area supported between the beams and girders are supposed to be divided into beams one foot wide. These beams are called slabs in which the breadth—b—will equal 12 inches. The total stress in the concrete can be determined, as depending upon the depth d. $325 \times 12 \times \frac{3}{8}\,d = C$.

To find a value for the total stress in the steel—S—it is possible to use the value of C found above.

$M = S \times \frac{7}{8}\,d = C \times \frac{7}{8}\,d = 325 \times 12 \times \frac{3}{8}\,d \times \frac{7}{8}\,d$. From these expressions it is possible to obtain by cancelling, $M = S \times \frac{7}{8}\,d = 20{,}475 \times d \times d \div 16$, and from this it will be found that S will equal $1{,}462.5\,d$. This result may be stated in the following manner: the total stress in the steel will equal the depth multiplied by 1,462.5. By substituting the above value for S in the equations given above, and by bringing all the results together, the following results are obtained.

$$M = 1/12\,Wl = S \times \tfrac{7}{8}\,d = C \times \tfrac{7}{8}\,d.$$
$$M = 1/12\,Wl = 1{,}462.5\,d \times \tfrac{7}{8}\,d.$$
$$M = 1/12\,Wl = 1{,}292.2\,d^2.$$

The use of the above equations may be made clear by an example. Suppose that a building is to be erected, having a width of 50 feet, and a length of 100 feet. The floor plan may be so arranged that the bays will be 16 or 17 feet wide and 20 feet long, as shown in Fig. 84. Each bay is then divided by beams which are 5 feet, and 4 inches on centres in the 16-foot bays. The slabs between the beams are considered as having clear spans of 4 feet 9 inches, the beams being assumed to be 7 inches wide. As stated before, the slabs are one foot wide and in this case have a clear span of 4.75 feet.



FIGVRE 84

The load per square foot upon this slab will be a combination of dead and live loads. The live load for this example may be considered as 200 pounds per square foot. As reinforced concrete is often used in factory and warehouse construction, the live loads are heavy compared with those found in office buildings, and are usually determined separately for each factory building and listed with the department. The dead load of the slab is figured on the basis that a prism of concrete, one square inch in cross section, and one foot long will weigh one pound. It follows from this that a cubic foot of concrete will weigh 144 pounds. The least allowable depth for a slab in New York is four inches, and it will be assumed that the floor slab under consideration will be as deep as this and the cross section of the slab will measure twelve inches wide by four inches deep. The area will be 48 square inches and the weight per foot of slab will be 48 pounds. The total of the dead and live loads per square foot will be 248 pounds, and the load on the slab will be 248 pounds per foot, multiplied by 4.75 feet, or 1,177 pounds. This is denoted by W in the formula $M = 1/12\,Wl$. To determine M in *inch* pounds it will be necessary to find the value of l in inches. The code requires that the span of slabs or beams shall be taken as the clear span, plus the depth of the beam, or as the distance from centre to centre of the supports. In the case of the slab under consideration the span will be found on the basis of the first consideration, namely, the clear span plus the depth of the slab, and will be 4 feet, 9 inches plus 4 inches, or 57 inches + 4 inches = 61 inches = l. Substituting, the formula becomes, $M = 1/12 \times 1{,}177 \times 61 = 5{,}985$ inch pounds.

To find the depth of the slab it will only be necessary to equate this with the formula $M = 1{,}292.2\ d^2$. . . . .

$$5{,}983 \text{ inch pounds} = 1{,}292.2\ d^2.$$
$$d^2 = 5{,}983 \div 1{,}292.2 = 4.6.$$
$$d = 2.15.$$

As has been stated before, the Building Department will not allow a slab to be less than 4 inches thick, so the depth from the top of the beam to the centre of the reinforcing will have to be more than 2.15 inches, and this *effective* depth will be increased to 3 inches, allowing one inch for fire-proofing.

Once the depth is determined, it becomes necessary to substitute again in the formula to find S, the total stress in the steel.

$$M = 5{,}983 \text{ inch pounds} = S \times \tfrac{7}{8}\,d.$$
$$S = 5{,}983 \times \tfrac{7}{8}\,d.$$

Assuming that d will equal 3 inches the above becomes,

$$S = 5{,}983 \times 8/21 = 2{,}280.$$

To find the size of the steel bars it will be necessary to divide this *total* stress by the safe allowable unit stress of steel, which, according to the code, is 16,000 pounds per square inch.

$$2{,}280 \div 16{,}000 = .142 \text{ square inches.}$$

In the hand-books published by the various steel manufacturers there can be found a table giving the areas of round and square bars. The sizes of bars that are commonly used in concrete work are given below with the areas of their cross sections.

Diameter or side	Area in square inches
¼ (round)	.0491
⅜ “	.1104
⅜ (square)	.1406
½ “	.2500
⅝ “	.3906
¾ “	.5625
⅞ “	.7656
1 “	1.0000
1⅛ “	1.2656
1¼ “	1.5625

If ⅜-inch square bars are to be used to reinforce the slab under consideration, their area is .1406 square inches. It was found above that in the slab, which is twelve inches wide, there will be needed .142 square inches of steel. One ⅜-inch bar will not be quite large enough if it occurs in each 12 inches of floor area, and it will therefore be necessary to space these bars a little less than a foot on centres. The method of finding the distance on centres is to divide the area of steel by the area of one bar, and then to divide 12 by this number. .142 ÷ .1406 = 1.017. 12.000 ÷ 1.017 = 11.79. From this it will be found that if ⅜-inch square bars are to be used they shall be spaced 11¾ inches on centres.

If a slide rule can be used, these calculations can be accomplished without any difficulty, and the method of finding the distance on centres of reinforcing bars given above can be used in preference to the use of tables. Engineers, however, have tables which can be used to find the spacing of these bars.

There is an important consideration, however, to be remembered with regard to this spacing. The Building Department will not allow bars to be spaced more than a distance equal to the depth of the slab multiplied by two and one-half on centres. In the case of the slab under consideration, the depth is 4 inches, and the maximum allowable distance on centres will be 2.5 × 4 = 10 inches. If ⅜-inch square bars were to be used spaced 10 inches on centres they would be too large. It will be found that ⅜-inch round bars will have to be spaced 9¼ inches on centres.

The next step to be taken is to design the beams, which are 5 feet, 4 inches on centres, and are 20 feet long. The load per square foot must first be found, and it has already been found that the load on the slab will be 248 pounds per square foot. The only item to be added will be the weight of the beam itself. To find this weight the depth and breadth of the beam must be assumed. If the beam is assumed to be 1 foot 10 inches deep and 6 inches wide, the area of the concrete section will be 132 square inches and the beam will weigh 132 pounds per lineal foot. To distribute this load of 132 pounds over the floor in such a manner as to have it considered as a part of the dead load *per square foot* of floor area, it is only necessary to divide 132 by the distance on centres of the beams. In the present case this distance is 5 feet, 4 inches, or 5 1/3 feet. 132 ÷ 5.33 = 24 approximately. The total load per square foot will be 200 + 48 + 24 = 272 pounds.

If the girders are considered as being one foot wide, then the beam will have a clear span of 19 feet, as the girders are assumed to be 20 feet on centres. The load on the beam will equal 272 × 5.33 × 19 = 27,600 pounds. $M = 27{,}600 \times 240 \div 12 = 552{,}000$ inch pounds. In this last equation l was figured as the distance in inches between the supports. $M = S \times \frac{7}{8} d$. From this equation it is possible to find S. $552{,}000 = S \times \frac{7}{8} d$. The depth of the beam has been assumed to be 22 inches, and, allowing 1½ inches for fire-proofing, and one-half an inch to the centre of the bar, the effective depth will be 20 inches. 552,000 × 8/7 × 1/20 = 31,500 pounds. Dividing this total stresss by 16,000 pounds gives the area of the steel as approximately two square inches. Two square bars, each one inch square, will furnish the proper reinforcing.

The question of shear is the next to be decided upon. In previous articles it has been stated that the tendency to shear a beam off at the supports is equal to the load brought by the beam to the support. This load—or reaction—is equal to one-half the total load on the beam and in this case 27,600 ÷ 2 = 13,800. To find the unit shear divide the total shear by seven-eighths of the effective area, or, $13{,}800 \div \frac{7}{8}\, bd = 13{,}800 \div \frac{7}{8} \times 6 \times 20 = 131$ pounds shear per square inch. The code allows a unit shear of 150 pounds per square inch, and so far as the New York Building Department is concerned, the beam is safe for shear. It might be pointed out in this respect, however, that the Joint Committee favors a unit stress of 120 pounds per square inch, and under this ruling the beam would not be safe.

There are other considerations to be taken up with regard to the checking of the design of the beam but these will be taken up in a later article.

The Legitimate Use of Imitations in Decoration

By Godfrey Giles

WHETHER imitation broadly viewed is legitimate or not is largely a matter of opinion. Who is the authority?

Some people may argue (and in many cases quite justly) that imitation is not legitimate, and it may be very bad form. For instance, I do not agree with the man who wears a gilt brass watch chain—if he cannot afford a gold one, a silver or steel one would be in better taste, to say the least. But in decoration I think I can show that imitation is quite legitimate, and in many cases desirable (one might say necessary), to obtain certain results and effects. To begin with, almost all decorative work is imitation in one form or another. Imitation is the basis of most decoration so called, and I will give you a few legitimate reasons for the use of imitations:—

1. The cost of the real article in many cases makes the use of it out of the question.
2. Imitations, when faithfully copied, often lead to the appreciation of the real article.
3. The production of some articles which have been applied to, or used in, decoration has ceased, and in some cases the art of making has been lost.
4. The imitations of the best periods of the antique is not only legitimate, but useful, being an education not only to the craftsman, but often to the purchaser, and a source of pleasure to the lover of a refined home.
5. When required for theatrical or temporary use.

Imitations in many cases are machine productions of materials produced by hand, whose artistic merit was the result of the skill and workmanship of the craftsman producing them.

The competitive age in which we live is largely responsible. for the machine-made article, which usually lacks the feeling of the original producer.

The machine-made goods are again imitated, the price is cheapened, regardless of what is being copied, each time losing in design and artistic merit, until it frequently happens that the article produced is only a burlesque of the original.

This thought was, no doubt, in Ruskin's mind when he spoke of the world in these later days having gone on the wrong track, holding that science has been used to inculcate the unchecked and competitive pursuit of material wealth.

The genius of originality is rare; it is an inborn part of our nature to imitate (that is how babies first learn), but let us be careful to select the best examples, and endeavor to produce them as nearly as possible as the master-hand would have done, and if price or competition has to be considered, better to adapt a simpler form of treatment, rather than endeavor to obtain an effect which may be pretentious, or incongruous and obviously a fraud.

What is Competition?

The following interesting appeal to Builders is reproduced from the "Monthly Letter" of the Boston Master Builders' Association.

THE use of other methods for handling or awarding building contracts, in preference to the badly misused competitive plan, seems to have gained most favor in the vicinity of New York. This is at first surprising to those who look upon New York as the natural home of the sharp-fanged wolf, the rare sabre-toothed tiger, and of the original Wall Street—for among such fauna, they might say, does modern cut-throat competition in the business of building flourish like the proverbial green bay tree. And yet, even should these prejudicial opinions stand the white light, it is natural enough that a district suffering most should seek relief the most diligently.

At West Point, where our National Government has been spending millions for building construction, the cut-throat competitive plan was used as long as possible—until altogether too many buildings were being completed by the bondsmen of the contractors. Then followed the plan of letting work on a cost and commission basis, with a maximum guaranteed, and with a further commission to the contractor on any savings effected and bringing the final price under the named maximum. The percentages were so arranged that the contractor made more money by saving than by spending—a precaution found needful when dealing with—shall we say anybody in "rude business?"—yes, business ethics are peculiar.

This newer plan, or some modification of it, is growing in favor even around Boston—for anyone by taking thought may see that to compare a half-dozen contractors and their prices is like comparing a half-dozen tailors. If the six are chosen very much at random, the suits they make may vary in price between twenty dollars and sixty dollars—while a more careful selection will get a variation in price between forty-five dollars and sixty dollars. But what is the use of doing it? And why does the sixty-dollar man stay in business? Of course, it is because he is not put into price competition with the others all of the time—and yet even the lowest-priced man has his place if he does honest work worth the price he charges. Owners realize this with a suit of clothes—for they have had the experience of buying such things every season. But building is different (!)—but the only difference in treatment is on account of the typical owner's lack of knowledge and experience.

Owners, as a rule, are misled by three things. First of all, the plans and specifications of their Architect are set up by them as a standard for what they want done in the way they consider proper, and they assume these documents, coupled with the Architect's superintendence, to be sufficiently compelling to obtain these desired results from any contractor at any price. As stated, the last few words signify an extreme case; but to an extent this is the viewpoint of the typical owner. Architects do not believe it, for they know that words are not capable of expressing what is wanted for quality of result—and no standards are available for comparison. An Architect's interpretation of desired and proper quality cannot be enforced on a contractor incapable of giving it, be he ever so willing to do so; and can still less be imposed upon a contractor not wanting to give it. If, perchance, the protest is carried as far as the courts, the contractor then wins—for a question of quality in building operations cannot be appreciated by a jury. (A review of scores of cases in several States shows the truth of this statement.) A jury recently declared that a plain maple floor was good enough, and satisfied a requirement calling for parquetry flooring.

The second point in the misleading of the owner is in the bids themselves. In spite of average care in the selection of bidders in a competition, the bids received will vary widely —the low being so far below the high that the typical owner feels sure that estimating is inexact, and that there is little about the price which will much affect the result he will get.

Then, as a third feature of his misleading, he gets no later opportunity to learn differently—unless his work is very poorly done—for when he begins to spend, in driblets perhaps, but yet to spend, for repairs and things he did not "expect to spend money on so soon, Heaven knows," but then "everybody's doing it"—even then Mr. Owner does not have an opportunity to learn that perhaps his neighbor's outlay for upkeep is one quarter of his own, nor possess sufficient impartiality to see that his neighbor's property continues to look fresh and in good condition, while his own does not.

It would be foolish to allege that an owner, in accepting a low figure, expects, usually, to get what he does not pay for. He believes that variations in estimates are due to inaccuracies or to larger profits taken by higher-priced men. Neither is true. Estimating is an exact science. A careful contractor, working on good plans and specifications by an Architect with whose work he is familiar, gets his cost within two per cent. on new work, and will average but little higher on alteration work. A low-priced man can easily make as much money on a contract as a high-priced one—unless the low price is due to inability. Many an owner, on small work, has been impressed with the argument put out by small contractors that they can work cheaper because they have not so much expense to carry. And yet the man assenting to this argument may himself be in an organization which knows by experience that up to a certain limit (?) the larger a business is the less it costs to do a thousand dollars' worth. The low-priced man is low, usually, because of a difference in quality of result. An owner who relies upon his Architect to produce a proper result under all conditions is very often expecting the proverbial silk purse from a sow's ear. Good Architects do not claim to do it—and the most successful among them aim for good contractors and shun those not doing the grade of work they want to get. A leading Boston Architect voiced this opinion in saying, "Architect and contractor must both be good or the result is poor."

What is competition?

Competition is the life of trade.

Competition is the death of trade.

Your choice of phrases will vary as you are a buyer or a seller; as you have downed a competitor or are being stifled; or, you may say, competition is the other fellow after my job, the other man after my customers, the fierce struggle for life and means.

Competition! Unions will have none of it, neither will socialists nor capitalists!

What is competition?

Is it the success of the strong, well-managed, and efficient over the shrewd, the tricky, and the deceitful? Obviously not —when price is a large factor in the result—although the reverse may be true. One writer calls it a legalized form of struggle for annihilation in modern life. Any proposition that contractors, or any other producers, may be encouraged to ruin each other in order that the community may get something at cost or less is unworthy.

Trade has always had one meaning synonymous with trickery, and any business man need only recall personal experience and observation to know that business with its competition has been at best only a war of wits in a game the rules of which are business ethics. Business ethics—what are they? Certainly a very peculiar brand.

And what of competition at its worst? And who suffers from the results? In the business of building he is called the owner. Does he know this? No, not at the time; usually not at any time.

What is competition?

On a bank alteration job an alleged ambiguity in specifications led to one contractor's success. He found, after he had expended about one hundred dollars on the job, that the Architect was expecting him to do things he had not estimated to do. Inquiries easily established the fact that four other bidders had all included the items in question—the successful one had not. Owner, Architect, and builder each paid one-third of the cost of the error, about three hundred dollars each. But what of the unsuccessful bidders?

On a house some distance from Boston, about ten years ago, three bidders figuring about alike were above the price set by the owner for his expenditure. The Architects, a leading firm, told him he could cut his requirements, or could get another series of bids from men doing a lower grade of work. He chose the latter alternative, and his house was built within his price.

On a job of interior finish, some distance from Boston, three or four years ago, three Boston bidders doing a similar high grade of work were within one thousand dollars of one hundred and thirty-seven thousand dollars. The work was let for ninety-two thousand dollars in another city, and, even after adding on an acknowledged error of twenty-five thousand dollars, the successful bidder would still have been sixteen per cent. under the Boston men. None of the Boston men would have made over fifteen thousand dollars on the job.

On a small job in a small town, five figures were: nine thousand five hundred dollars, nine thousand three hundred dollars, nine thousand dollars, eight thousand nine hundred dollars and six thousand six hundred dollars. What is obviously within a few hundred dollars of the right price? The owner was delighted at the low price Why should he have been?

On a recent bank alteration job with six bidders four were eliminated after the bids were in because they were not local men. Refiguring of cuts was done by the other two, and one dropped one thousand dollars more than the value of the cuts (finding he had to do so), and although still high was awarded the job because he was a depositor in that bank, while the other was not.

On a job in 1912, where cuts were figured, one competitor dropped five hundred dollars where twelve hundred dollars' worth of stone mason's foundation was changed from stone to concrete in location where materials for either were easy to get. Cuts offer a splendid opportunity for one man to drop by another, and win by—in fact, submitting a second figure when he surmises his first one was a little too high.

Recently sub-contractors for painting figured so cleverly that the lowest on a job was six hundred and fifty dollars and the highest two thousand one hundred and eighty dollars, with enough good men together around one thousand five hundred dollars to show that probably there was the right price. Some contractors figuring would use the low figure; others not wanting to must do so, or risk their chances of winning. This element is a common feature of competitive bidding.

In 1915 a job near Boston had four bidders within a fifteen hundred dollar variation figuring around sixty-two thousand dollars, while a fifth was about fifty thousand dollars, and won the award. What will happen to the winner and to the work he does? What was the owner's reasoning?

"Time is of the essence of this contract." How often this is written! A year ago a large job was let to be completed August 15, 1915. On October 1, 1915, it was nearly done. A contractor's promises for time are commonly taken in preference to an examination of his performances.

Not long ago the wife of an owner told a friend about to build to put a forfeit clause into his contract, for the reason that it could always be collected, for some reason or other, and was a good way to save on a contract.

On a job of plumbing worth seven hundred and fifty dollars a low bidder was awarded the work at four hundred and seventy-five dollars. Recently, two years later, alterations were made, and the hot and cold water piping, specified "iron-sized brass"—a good brass pipe—was found to be gilded iron. This meant that the Architect was either ignorant, careless, or dishonest.

The above cases, excepting one or two, are typical instances of occurrences which are very common—so common that they would not be worth reciting were our readers only those familiar with building operations. The cases quoted are not garbled or exaggerated, but are normal, and are all actual happenings.

What is competition?

The story is told of a contractor in Greece who stood before a statue of a famous oracle, which—following a custom set by Galatea, Hermione, and others—"came off his perch" and walked up to the contractor. "Why this variation from proper statuesque practice?" said the contractor. "Are you not," replied the oracle, "the man considered dishonest until proven honest; the man who has to know what is in an Architect's mind when he draws a line; what 'suitable,' 'approved,' 'satisfactory,' and 'practicable' mean as he uses them; and how 'reasonable' he is going to be; and do you not have to forecast prices on materials, and particularly on labor with variations beyond your control?" "Certainly," said the contractor: "but that is my job, and I am used to it." I am something of a prophet myself," said the oracle; "but your job is harder—here, get upon that pedestal, I resign in your favor." "No, thank you," and the contractor walked away; "contractors don't go on that kind of a bust."

The variations in estimates, as commonly found, where in an average case the low figure may be twenty per cent. under the high, are not due to a lack of understanding of an Architect and his plans and specifications where careful estimators are involved. The worst variations in such cases would probably not exceed six or eight per cent., and this variation would be in either direction. With a poor Architect a good contractor would be too high, while with a good Architect a poor contractor would be too low. The balance of the too large variation in bids is from other sources, largely the use of sub-contractors and the quality of the result. These two points are related, but a good general contractor, doing good work for his own portion, may trade, squeeze, cajole, or drive sub-bidders down so low that only poor work from them is obtained. Of course, in dull times profits will be cut, but in the best of times these are never half so large as the differences between figures. Probably any contractor in Boston would be glad to be assured of twelve and one-half per cent. gross or seven and one-half per cent. net, and would gladly take all the work he could get at those figures.

The element of error in estimating, due to carelessness or other mistakes not arising from inability, is, of course, a recurring one, but among careful men this is far less frequent than is commonly supposed. Error due to bad judgment or downright incompetency in estimating always plays a part, and in an award based upon price alone such an estimate is obviously dangerous. The use of a bond to secure an owner puts a certain burden of investigating the contractor upon the bonding company. It has no particular result otherwise—contractors can get bonds.

An estimate far below a group of figures, a frequent happening, can only mean one of three things:—

1. An error on the part of a man doing good work—and who will do the job properly and suffer by his error.
2. An honest price from an honest man who gives the best value of which he is capable, but whose work is low in quality.
3. A cut-throat price from a cheap man who will save or skimp where he can, trust more or less to luck to come out square, and who cares little for results if he can "get by."

The two latter are the usual low bidders, and the last is the man more commonly found surprising everyone by his low figures, until finally he is pushed to the wall and another of the same kind takes his place.

Where did the practice of awarding the contract to the lowest bidder begin? What excuse has such a practice for existing? It is impossible to secure the best or even good work by such a method.

Why should not the Master Builders' Association take the initiative in an attempt to correct this method? Why should it not lead in an earnest endeavor to persuade Architects and owners to abandon this practice and adopt a new one? Suppose, as another suggestion, they were to award the contract to the "average" bidder; would not this retain all the essentials of competitive bidding, eliminate all temptation on the part of the bidders to "skin the job," and secure for the owners better results in accordance with the true intent and meaning of the plans and specifications?

Sound Transmission Prevention

SOUND-PROOFING has heretofore been confined principally to sound-deadening the floor only, with meagre consideration of the effect of beams, columns, etc., on sound transmission.

The velocity of sound depends on the elasticity and density of the medium through which the sound reaches the hearer. Sound waves travel in water four times faster than in the air, and sixteen times faster in iron and glass—important factors to be considered in the use of wood, steel and concrete in building construction.

The volume of sound depends on the amplitude of the vibration (as, for instance, is afforded by the larger surface of a floor) as well as its intensity depends upon the density of the medium—wood, steel, etc. Therefore, the apparent ease with which sound is conducted from one part of a structure to another—through the floor joists, beams and columns, whether composed of wood, steel or concrete. Concrete tends to conduct, rather than deaden, sound.

Set in vibration a diapason, and the sound is scarcely heard unless held near the ear. Place the stem against a table or an iron beam, and the sound rings out loudly, but the waves seem to issue from the beam or table, the sound in this way having been reinforced. This is precisely what occurs in buildings when we make practical sounding-boards of floors, walls and ceilings. These broad surfaces throw into vibration not only a large mass of air, but communicate the amplified vibration to the surrounding joists, beams and columns, which in turn intensify the sound waves and transmit them to other apartments.

A vibrating body tends to make other bodies vibrate with it, whether they be connected with one another or not. For instance, the sound of a certain note on a pianoforte may sympathetically affect a substance or certain thing in another room or part of a building, which substance or thing would respond to no other note. A sympathetic vibration may also give rise to great danger in vibrations of the walls of a building, caused by vibrating movements of machinery. Often this is overcome by changing the motion of machinery.

If, of course, the vibrating and vibrated body are in actual contact, as in the case of floor boards resting on joints, and the joints on a beam, the induced vibrations will be more vigorous, and will even exert an amount of vibration and sound out of all proportions to the original vibrating cause.

Often in tracing the source of sound transmission, even in a supposedly sound-deadened room, it will be found that the sound has been conducted by a beam under the floor. More frequently the sound is conducted from one apartment to another through the floor boards passing under a partition, and it may be advisable to cut through the floor boards at this point so as to break the connection, and then insert a non-conductor.

A low ceiling accentuates sound.

Dampness in walls conduces to reverberation.

In the construction of prisons, double walls filled with sand were used to prevent the inmates from signalling by sound conduction.

A wooden ceiling, the lining of walls with wood, and the use of internal fittings of wood, all introduce resonant materials.

The shifting of certain furniture in a room, away from and out of contact with the walls, will frequently considerably affect the transmission of sound.

The absorption of sound waves within a room can be most readily accomplished by the use of curtains, carpets, hangings, etc., but may not stop its conduction along the floor or along the ceiling to another apartment. In fact, the effect of sound transmission is due not so much to the penetration, as it were, of sound through a concrete floor or ceiling, as to the sound being reinforced and conducted along the floor and ceiling or through a beam or column in contact with them. There must be interference with the sound waves.

Hollow spaces between floors, and in hollow-tile or other partitions, should be interlined, broken up or so treated as to make the confined air non-resonant. Floors, joists and beams should be made non-conducting. The top flooring should be insulated from the under flooring, the under flooring from the joists, the joists from the beams, the beams from the columns, (especially in wooden construction) the partitions from the floor, and the ceiling laths from the under side of the joists—through the interposition, in each case, of a non-conducting material.

It is, therefore, the placing of dense sound-carrying media (especially concrete and steel), in combination or in contact, which mainly causes the transmission of sound. Wherever possible, therefore, break the contact.

Legal Decisions of Interest to the Architect

These decisions appear monthly and are edited by Mr. John Simpson, the well-known lawyer.

ESTIMATES OF ARCHITECTS—DISCHARGE OF SURETY.

Estimates were made by the architect in charge of a building in accordance with the contract provision, except in the case of the first estimate, which was in excess of the 90 per cent. provision of the contract, but the architect was deceived by the representatives of the contractor. Although, when the building was finished there was not 10 per cent. on hand for the contractor, this was on account of the fact that the officers of the school board, the owner, for their own protection as well as that of the sureties, were compelled to take charge of the building on account of the failure of the contractor to perform his duty and pay for the material and labor direct. The Oklahoma Supreme Court held that the provision of the contract was substantially complied with and the sureties were not released.—Crudup *vs.* Oklahoma Portland Cement Co. (Okla.) 156 Pac. 899.

ACTS CONSTITUTING RENUNCIATION OF BUILDING CONTRACT.

Plaintiff contracted to do certain building work for defendant, agreeing to commence at once and prosecute the work with all possible despatch, and to furnish a sufficiency of labor and skilled mechanics when it was possible to proceed. The defendant agreed to make payments on monthly estimates. During the second month of the work the plaintiff was notified to stop, as a reorganization of the defendant company was contemplated. Estimates were given, but no payments were made on account of the work done. It was held that whether such notice to stop work indefinitely constituted an absolute and unequivocal renunciation of the contract, such as to entitle the plaintiff to maintain an action at once for the breach, was a question for the jury, which found for the plaintiff.—Colorado Yule Marble Co. *vs.* Collins, C. C. A., 320 Fed. 78.

IMPOSSIBILITY OF PERFORMANCE.

When one enters into a contract with a builder to erect a structure in accordance with plans and specifications, which are open to inspection, without express provision touching the subject, there is no implied warranty or agreement on the part of the owner, in the absence of circumstances which by necessary intendment are the equivalent of a warranty or agreement, that the work can be done according to the plans and specifications, or that, if so done, it will be safe. It is the duty of one who proposes to enter into a building contract to examine the contract, plans and specifications, and to determine whether it is possible to do the work before entering into the engagement, or to insist upon some stipulation covering that matter. If, without a special agreement on that point, he makes a general contract without fraud or mutual mistake, he has bound himself to do the work. If it turns out that he has agreed to do something which is impossible or impracticable, he cannot for that reason refuse to go forward. Having made his contract, he must fulfill it or bear the consequences of a breach.—N. J. Maquam Co. *vs.* Fuller, Massachusetts Supreme Court, 111 N. E. 399.

ENFORCEMENT OF BUILDING LINE RESTRICTIONS.

Where by the enforcement of a line restriction, the defendant, who had commenced construction of his building, would be greatly damaged, and the value of his property would be diminished if he were compelled to remove sun porches extending beyond the building line, and the complainants made no attempt to prove that any damage would result to their property in another street from the construction of the sun porches, the Illinois Supreme Court held that, while the complainants could enforce an express covenant without proof of damage, there being a doubt as to their right to the enforcement of the covenant, a court of equity would give consideration to the inconvenience and damage that would result to the defendant in determining whether an injunction should issue.—Loomis *vs.* Collins (Ill.) 111 N. E. 999.

BUILDING LINE RESTRICTIONS—BAYS AND PORCHES.

An agreement fixing a building line authorized the building of bays beyond the line. The Illinois Supreme Court holds that the mere fact that a bay window rises from a foundation in the ground, instead of being a mere projection outward from the ground, does not make it any the less a bay window, or violative of the covenant.

The restriction authorized porches to extend beyond the line. It is held that the building of porches on solid foundations is not a violation of the covenant. That must be construed as intended to protect easements of light, air and view, and as the porches came only to the level of the lower floor of the buildings, neither they nor their foundations constituted an obstruction. Uninclosed porches rising several stories high, not part of the building itself, are not in violation of a covenant authorizing porches to be built beyond the line, for such porches do not obstruct the easements of light, air, and view to be protected. But the restriction was violated by the construction of sun or inclosed porches beyond the line, where such porches were inclosed within the principal walls of the building, and, though furnished with several windows, were equipped with means of radiation, for such porches were really part of the principal building and obstructed the easements of light, air, and view intended to be protected by the covenant. "Porch," used as synonymous to "portico" and "veranda" means a covered place of entrance to a building, differentiated from its principal mass. No part of the main mass of a building may be properly called a porch.—Hieronimus *vs.* Moran (Ill.), 111 N. E. 1022.

DISTINCTION BETWEEN PLANS AND SPECIFICATIONS.

In an action for labor and materials furnished for a building, the Pennsylvania Supreme Court referred to the distinction between plans and specifications drawn in Knelly *vs.* Howarth, 208 Pa. 487, 57 Atl. 957. The question raised in that case was whether the failure to file the plans and specifications made the lien for work and materials invalid under the statute, which provides that the claimant shall set forth a copy of his contract or contracts. It was there held that where the specifications are expressly made a part of the contract or are referred to as a part of it, they must be filed with it. If only a part of the specifications apply to a work for which a lien is filed, that part only need be filed. Plans, the Court said, may be important or even necessary to indicate the methods to be followed and the results to be accomplished in carrying out a building contract. But there is a distinction between them and specifications that provide for the kinds, quality and quantity of materials to be used and the work to be done and the time and manner of doing it, without which the contract would be incomplete and ineffective. They are not in the same sense nor to the same extent an integral part of the contract. Their office is rather to illustrate and explain what is to be done. Often they consist of drawings, designs and plates that are not the property of the contractor nor within his control, but belong to the owner or the architect of the building, and their size and form are often such that the filing of copies of them, if not utterly impracticable, would cause great public and private inconvenience.—Hartley-Zeigler Co. *vs.* Bacon (Pa.) 96 Atl. 257.

Building Restriction, By Whom Enforceable.

The practical construction of a contract, such as a restrictive building covenant, by uniform and unquestioned acts of the parties continued for a long time, is entitled to great, if not controlling, weight, as there is no surer way to find out what the parties meant than by observing what they have done.

Where the grantor of part of a tract owned by him covenanted that neither he nor his heirs or assigns should erect on the remaining part any building the front walls of which should extend beyond the front line of the building which might be erected on the premises conveyed, limiting such restriction to four feet, the dominant estate was that of the grantee, and the whole of the remaining land was servient thereto, so that the subsequent owner of the eastern part of the lot so conveyed, was entitled to assert the restriction as against the grantees of lots in the remaining part, though some of such lots did not adjoin the dominant estate.

In such case, where the restriction was given by the grantor to protect his grantee from buildings beyond a certain line on the grantor's remaining land, the restriction, while enforceable by the grantees of the grantee and covenantee against the grantor and covenantor, or his grantees, was not enforceable by the subsequent grantees in the servient estate.—Porter *vs,* Denny, New York Appellate Division, 156 N. Y. Supp. 1016.

Extra Work—Sheet Piling Trenches.

Where a building contract required the principal contractor to sheet pile the outer sides of trenches, the New York Appellate Division holds that a subcontractor who was doing excavation work was not entitled to additional compensation for earth which caved in on the inside of the trenches, it being his duty to sheet pile such trenches, if necessary.—Amanna *vs.* Carvel, 152 N. Y. Supp. 796.

Discharge of Surety By Alteration of Plans.

A construction contract, on which a surety bond was based, required plain, straight front windows, and thereafter the contract was altered without the consent of the surety, to require a double arcade, and again further altered to require a wooden basement floor instead of concrete, both changes being at additional expense and neither being possible of completion independent of the principal contract. The Arkansas Supreme Court holds that the changes were a material alteration of the contract such as to discharge the surety.—Southwestern Surety Ins. Co. (Ark.) 184 S. W. 54.

Specific Performance of Building Contracts.

Courts of equity will not specifically enforce building contracts where performance cannot be consummated by one transaction, and when the contract, according to its terms, requires a succession of acts and a protracted supervision, with special knowledge and skill in its oversight and management.—Crane *vs.* Roach (Cal.) 156 Pac. 375.

Necessity for Architect's Certificate—Contractor's Voluntary Abandonment.

A building contract provided that where, for one or more reasons therein specified—failure, refusal or neglect of the contractor to supply a sufficiency of properly skilled workmen, or failure to prosecute the work with promptness and diligence—the owner terminates the employment of the contractor, enters upon the premises and finishes the work, expenses incurred by the owner in so doing should be audited and certified by the architect, whose certificate should be conclusive upon the parties. The clause contained no reference whatever to a voluntary abandonment of the work by the contractor and the entry of the owner in consequence. To require a certificate from the architect in such case as a condition to a right of action by the owner would be, the Pennsylvania Supreme Court held, to invent a requirement for the protection of a defaulting contractor which the contractor himself, when he entered into the contract, either overlooked or thought not worth inserting. In Geo. A. Fuller Co. *vs.* Doyle, 87 Fed. 687, the dispute was identical with that in the present case; the contract contained like provisions, and it was there held that under such circumstances—voluntary abandonment of the work by the contractor—the requirement of a certificate by the architect was inapplicable. In Heilbrink *vs.* Schaffner, 147 Mo. App. 632, 127 S. W. 418, the same view was taken. It was there held that by a similar clause "the contingency of abandonment by the contractor was not provided against," and the absence of a certificate from the architect on voluntary abandonment was no defense to the owner's action.—Hardie *vs.* Bateson (Pa.) 97 Atl. 464.

Liability for Negligent Excavation.

In an action by an adjoining landowner against a bank for injuries from the excavation for its new building, the Wyoming Supreme Court holds that the ordinary care that is required in excavating toward an adjoining owner is the care and skill to meet the conditions which are apparent or known to the owner or contractor at the time of commencing the excavation, and if the excavation or the manner of making it is reasonably liable to injure the adjoining lot, or buildings thereon, the adjoining owner is entitled to reasonable notice so that he may protect his property. Such duty arises out of the nature of the case and a due regard for the rights of others. Such is the trend of modern decisions, although it may be conceded that the earlier English and State decisions were the other way.

In this instance the bank retained control and supervision of the work by the builders. It could not, therefore, claim relief from liability on the ground that negligent excavation was the work of independent contractors, and was liable for the result of the careless and negligent excavation of its servants.—Stockgrowers' Bank *vs.* Gray (Wyo.) 154 Pac. 593.

Delivery of Building Free from Liens—Liability of Sureties.

A building contract required the contractor to furnish and pay for all labor and materials, and discharge and hold the owner free from all claims. It required the contractor to give bond with good and solvent sureties for faithful performance of the contract, and to deliver the building free from all liens. The contractor gave a bond signed by individual sureties . In an action against the contractor and his sureties it was held that the sureties were liable for his breach of contract in failing to deliver the building free from liens; and, where the claims and liens against the building exceeded the last installment of the contract price, the excess could be recovered from the sureties—Pope *v.* Lawson, Arkansas Supreme Court, 174 S. W. 148.

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Editorial

The Tenement House Architect, past and present—Stock Patterns

IT was not so very many years ago that it was considered to be more or less of an insult to speak of a man as a tenement house architect, or a loft building architect, and unquestionably the design and the professional methods of many of the men whom the real estate promoters selected to do these buildings, laid some foundation for the disfavor with which they were regarded by the balance of the profession.

It has been, however, very interesting to see within the past few years the entire change in the attitude with which these men are regarded. In the first place the real estate speculators found that good design paid; they have been, therefore, willing to pay for good design, and have either gone to better architects, or have been able to encourage the really talented men who have specialized in this field, and given them opportunity to spend time and thought enough on the work to secure proper study and intelligent planning. Therefore, today when we speak of a man as an apartment house architect, or a designer of loft buildings, the title brings with it a certain amount of up-looking; respect for the man's artistic ability, as well as for his business capacity, which we have most of us secretly admired. The loft buildings in New York today probably average in design as well as any class of structures in the community, and the apartment houses are not very far behind. The designers of both these types of buildings have felt free to get rid of much of the extraneous and useless ornament which is apt to clutter all American design, and to work out their problems in terms of brick and flat stone work, with a very great use of colored materials as the basis for ornamentation. The buildings designed in this way cannot in many cases be pointed to with very great pleasure; their success is, on the whole, negative; they are unobtrusive rather than beautiful, but this marks such an advance over the period of ten years ago when an apartment house was admired because of the superfluity of fat and twisted naked ladies supporting the balconies in the second story, and of garlands of Irish stew depending from the cornices. The theory upon which the present day men are working is so essentially logical, and so inevitably right, that once in a while one of them comes across with a building which is really a superb piece of design.

There has been a great deal of talk in the architectural profession—and in the architectural press—for the last twenty years about the proper expression of steel in a tall building. Mr. Louis Sullivan has designed several monstrosities expressly with this purpose in mind, and has perhaps not succeeded as well as many, who, in designing loft buildings, have developed façades with one eye on the building code, and one eye on the engineer's layout. Thus unconsciously they have developed a style which is more or less unique, and which certainly does express skeleton construction enclosed in fireproof materials very perfectly, and without any obvious strain for such expression.

IT was not so very long ago that practically all ornamental work of every description, and all moldings, were bought either by the architect out of stock, or made up from stock patterns, and such was the common practice from the time when building materials began to be fashioned by machinery, until almost within the memory of the youngest living architect. It is extremely probable that most detail work of the Middle Ages was done roughly in accordance with stock patterns, but as all the work was gotten out by hand, and the instruments of precision were rare and perhaps not much used, the results produced varied infinitely in the different buildings It is hardly fair for the architect of today to take up "Paley's Gothic Moldings," and to wonder at the number of different sections, as if each were very carefully studied out for a particular position. Such was in all likelihood not the case; what more probably occurred was that the architect, or mason foreman, who had charge of the building, directed his masons to cut a certain type of molding at a certain height, and the individual understanding of the type of molding on the part of the stone cutter himself produced these variants. As evidence that this is probably the fact, we find that the same label course or string course on a Gothic building will produce a number of different sections, although the conditions of lighting and the relations to the eye may be substantially the same in all cases. Likewise, the carved ornaments with which Gothic architecture was so characteristically profuse were, in the main, variants of a few simple motives, their interest depending rather upon the skill and artistic intelligence of the stone cutter, than upon the originality of design of the architect. We are too apt to think of examples of Gothic architecture separated by perhaps two hundred years in time, and hundreds of miles in distance, as belonging to the same school, and to be surprised at the interesting variance between similar motives in the two cases, forgetting that methods of communication in those days were extremely bad, and that Gothic buildings erected about the same time in the same neighborhood, show a surprising paucity of originality.

Thus, when machinery for the fabrication of building materials came into general use, it was natural enough that the architects or designers should not search with very great care for exactly the right delicacies of design, but should order from stock those ornaments and molded pieces which roughly fitted their several positions. This practice has been productive of both good and bad results, depending upon the quality of the designer who originated the stock patterns which were thereafter faithfully copied; just as in medieval times the ability of the workman determined his interpretation of what was to him a stock pattern.

Probably not many architects realize that a very great deal of extremely interesting Colonial ornament and very many of the wood moldings which we admire so greatly in Colonial houses, were bought out of stock and the interesting quality of Colonial detail cannot in many cases be attributed to the high standard of materials from which he made his selection.

Some years since the writer had occasion to purchase for one of the well known New York architects, a Colonial doorway, being instructed to purchase, if possible, a certain one on an old house in Houston Street. The owner of this particular doorway was found to be unwilling to sell it, and a search through the neighborhood for other doorways of similar size, revealed the fact that it was but one of a dozen or more doors exactly alike in every detail, and decorated with the same composition ornament, so that the only possible conclusion was that this doorway was one which had at some time been carried in stock by an early woodworking mill. The various examples of this door were not confined to one particular locality, but were scattered all over the lower part of the city, and were used in houses of very dissimilar design; yet in no case did the door appear to be inappropriate to its setting, or out of scale with the balance of the building, probably because all the ornamental work of the various houses had been made up from stock patterns, designed by the designer of the doorway.

These happy results were commonly to be found in the early days of the Nineteenth Century all over the United States, but the same method of selection prevailed in the Victorian period, and produced the characteristically hideous results of that time. Probably 90% of all the residences built from 1830 to 1880 had no work manufactured especially to full size detail, but every ornamental item from the cresting of a slate roof to the cast iron goddess on the cast iron fountain on the front lawn, were selected from stock, and the stock patterns of that period are in many cases still carried by the manufacturers. It is from the frightfulness of these stock patterns that the present tendency on the part of architects who care anything about their work, to full size every individual item has arisen. Probably nothing nowadays is customarily bought from stock, except hardware and lighting fixtures, two fields in which the manufacturers have displayed the largest amount of intelligence in the artistic treatment of their stock patterns. Of late some of the manufacturers of mantels, one in particular, have been producing stock mantels of a sufficient variety of design to conform to rooms of almost every treatment, and of a quality of design, in general, superior to that which would be secured by office draughtsmen. Another field in which stock patterns have been made with success, is the plasterer's. A considerable amount of composition and plaster ornament is made after stock patterns, because the designs are of high quality and the number of patterns is very great.

It seems unfortunate that there are not more of the items which enter into the construction of American buildings, from the cottage to the skyscraper, where stock ornament could not be more profitably used. As it is at present, the additional expense of especially designed ornament, or especially designed moldings, has prohibited their use in the vast number of houses designed by contractors, or by architects who are just over the border line, and who, sincerely anxious for good results, either lack knowledge, or are not paid sufficiently to go carefully into the detail design necessary to secure them; thus the improvement in stock patterns will immensely raise the standard of American building. We are apt to judge the progress of architecture, not by the great mass of the buildings, but by the most notable and the most expensive. We forget that all the architecture of the country is what determines the appearance of the country as a whole, and while good examples will do much to improve this standard, it must not be forgotten that ignorance, or the lack of good taste in certain backward communities, and even in large sections of the country, is immense. Men in such sections cannot be reached through architects, and the standards in their districts can be raised only by giving them better materials with which to work, and the thousands of residences, and the hundreds of schools and court houses, the expense of which we now ignore or forget, but which are still serving as examples of fine buildings to their several communities, would be more worthy so to serve.

A better quality of stock patterns would also be of the utmost service to the architect, who now has to detail every portion of his work; these details in many cases being absolute repetitions, for the architect has found a certain type of ornament, or a certain molding, or a certain type of window frame to be completely satisfactory, and repeats it; he does not know how to do anything any better, and there is no reason why he should change. And there is no question that we regard stock patterns for many articles in the same way. These things would lower the cost of the building straight through the country, lower tthe architect's cost of doing business, and would in general increase the quality of design of all our buildings.

MR. THOMAS H. MAWSON, the great English landscape architect, and author of "Art and Craft of Garden Making" and "Civic Art," will come to the United States in September to remain for about three months.

His principal object in visiting the States this autumn is to call attention to the re-planning of Athens, which is a subject that ought to appeal to every scholar the world over.

The Athens report gives a unique opportunity for an intensely interesting publication and one which will take premier position among published city planning reports. Three of the drawings are exhibited in this year's Royal Academy.

LE BRUN TRAVELLING SCHOLARSHIP, 1916.

THE problem to be considered by the participants in this year's Le Brun Travelling Scholarship Competition is unusual, and while its nature cannot be made public in more detailed fashion at the present time, it may be said that it is essentially American, in fact Southwestern in character, the sort of problem in style with which a practicing architect might very well find himself faced; but toward the solution of which it is felt that no very serious effort has, so far, been made. It takes into account the general climatic and ethnic nature of the Southwest from New Orleans to San Diego and northward, and should give the competitors an opportunity for a full display of whatever artistic, poetic and practical ability they may possess.

This year's committee has felt strongly the desirability of leaving the competitors to their own devices, therefore, the drawings to be submitted are very indeterminate in character. There are seven or eight of these and the method of rendering is left wholly to the discretion of the competitor himself. It is believed that in this way a far more interesting result will be obtained than would be the case if the style and method of rendering were carefully stipulated in the usual fashion.

By the terms of the Deed of Gift, the competitor, to be eligible, must be an architect or draughtsman, a citizen and resident of the United States, between twenty-three and thirty years of age; who is not nor has been the beneficiary of any other travelling scholarship, and who has had at least three years experience as draughtsman or practicing architect.

The successful competitor will receive the sum of one thousand ($1,000) dollars and is required to make a trip abroad of not less than six months duration.

Every competitor must be nominated by a member of the New York Chapter of the American Institute of Architects who will certify in writing that the above conditions are fulfilled by the nominee, and that in his opinion the nominee is deserving of the scholarship. Those not having the acquaintance of a member of the chapter may avail themselves of the services of any well known architect who can vouch for them to a member of the New York Chapter, with whom he is acquainted.

Intending competitors must apply for permission to submit drawings on or before August first, 1916, upon which date copies of the full programme will be sent to all such applicants as have qualified. In the preliminary notice that has appeared in the various technical journals this date was given as July 15th, 1916, a date which the committee hereby extends. No application received after the first of August will be considered.

BERTRAM G. GOODHUE,
2 West 47th Street, New York City.
Chairman, Committee on Le Brun Traveling Scholarship.

NEW YORK SOCIETY OF ARCHITECTS.

THE regular monthly meeting took place on Tuesday evening, June 20, 1916, at the society's headquarters, the United Engineering Societies' Building, 25 West 39th Street, this being the last meeting before vacation time. President James Riely Gordon, presided.

Among the matters discussed was the recent amendment to the lien law, brought about by the efforts of this society, whereby an architect may now obtain a lien on property for plans and services rendered, other than actual supervision of the improvement.

BOOK REVIEWS

INDICATION IN ARCHITECTURAL DESIGN. David J. Varon, 1916. The Wm. T. Comstock Co., New York. Fifty plates. Cloth. $5.00 net.

The author has been very successful as professor of architectural design in several American colleges and as a private teacher. His work has been extended among men mature in the profession as well as to students and tends to correct a very common failure of architectural designing in the inability to think in three dimensions. In other words, the designer cannot convey his idea to the client by a flat sketch expressing only height and length which never presents the idea of proportion and appearance of the future structure. The third dimension should be introduced by casting shadows or perspective. This may be done quickly and attractively during the study of the problem by means of free hand pencil sketches as shown by Mr. Varon's work.

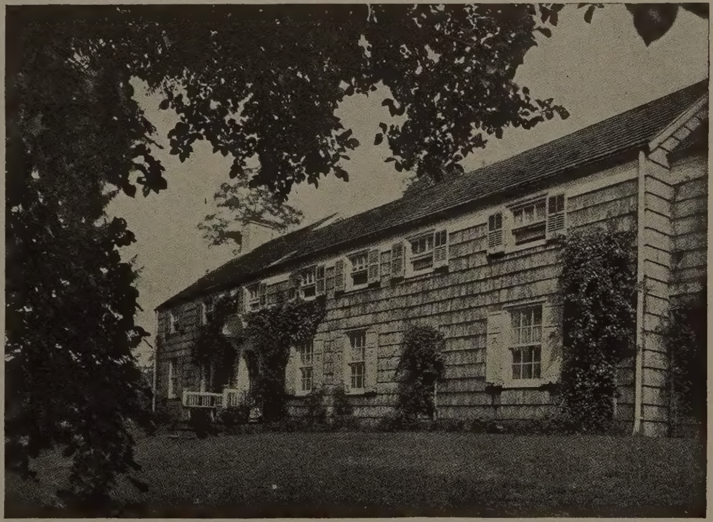
This book, illustrative of the methods pursued at the Ecole des Beaux Arts, teaches the subject of architectural design in a natural way. Beginning with analysis of the elements of design, it leads to composition in architecture, planning and design problems. The spirit of the method is evident throughout its pages, and there is inspiration for the student-architect in every sketch. Indication is shown as the best means of analysis and is made teachable to the least experienced.

NEW HOMES UNDER OLD ROOFS. 1916. Joseph Stowe Seabury. Frederick A. Stokes Co., New York. Cloth, $3.50.

In view of the expanding interest in the preservation of old New England houses, this little work—geographically local, though perhaps universally applicable—is shaped for the sympathetic public. Only in the past decade or two has the general wave of appreciation for household antiquities found its way to the very buildings which once sheltered them. Our successful efforts to save these landmarks, as monuments of history and models of early American architecture, have been steps towards the recognition of the habitable possibilities in neglected farmhouses.

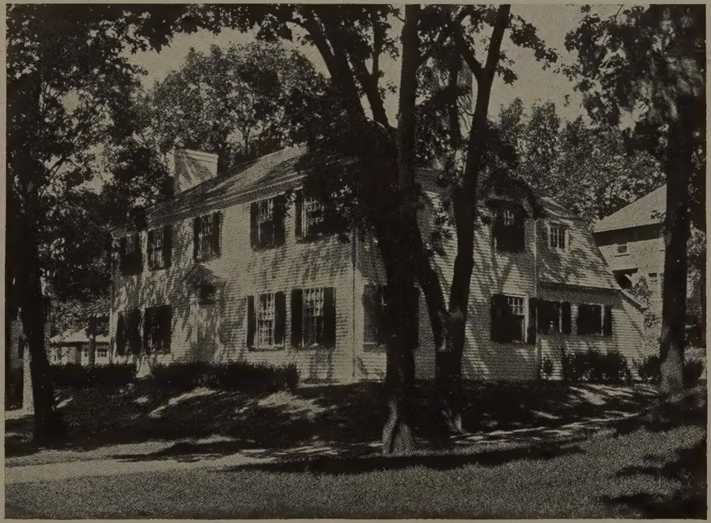
Between these covers are illustrated some three dozen seventeenth, eighteenth, and nineteenth century farmsteads which have been discovered and converted into livable homes by those discerning people who are able to interpret the language of an old house. The examples shown are taken from the immediate countryside about Boston, Mass., where this reconstructive tendency has created a wide variety of schemes. To the reader one alteration may appear good and the next not so good, which suggests that individual taste and the character of the house in hand can alone govern the processes undertaken. Only the exterior is considered in picture, and the brief textual references, for the most part, pertain to those architectural and esthetic features which have a bearing on the external character.

American Architect.



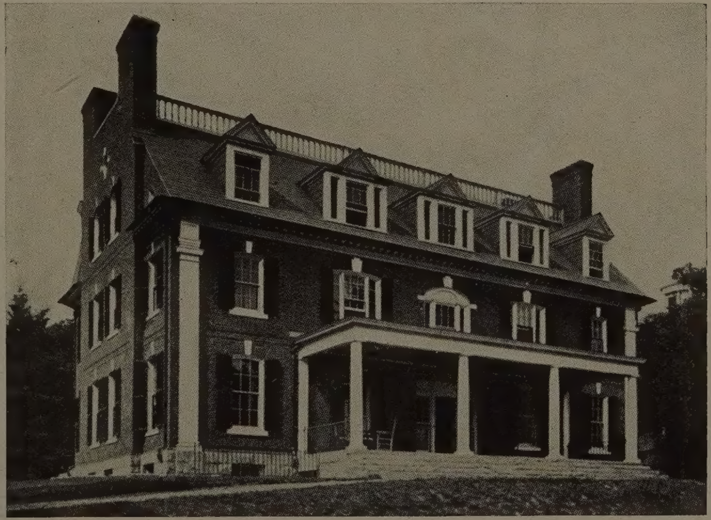
Alterations, House, J. M. Townsend, Mill Neck, L. I. Hewitt & Bottomley, Architects.

American Architect.



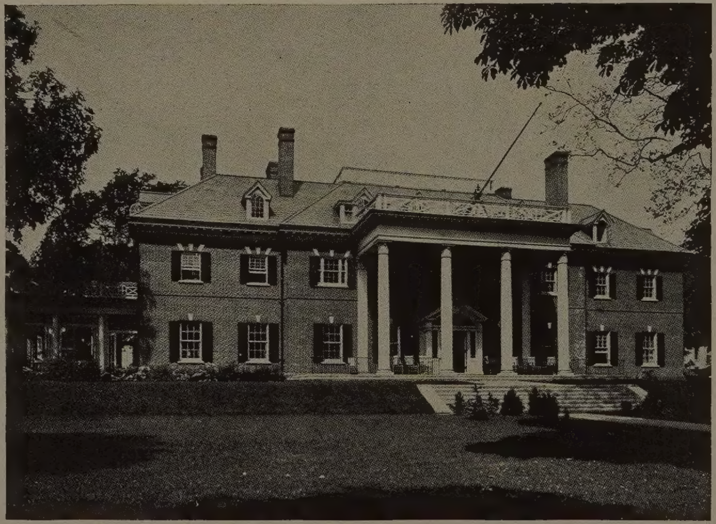
House, F. L. Pierce, Newtonville, Mass. Denby & Robinson, Architects.

Brickbuilder.



Phi Delta Theta Fraternity House, Amherst, Mass. Putnam & Cox, Architects.

Brickbuilder.



Phi Upsilon Fraternity House, Amherst, Mass. Putnam & Cox, Architects.

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